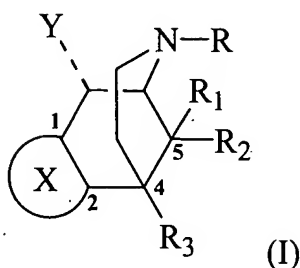


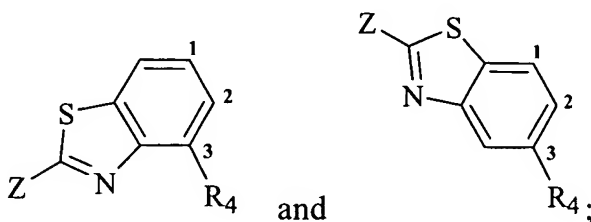
Claims

1. A compound of formula I:



or a pharmaceutically acceptable salt thereof, wherein

X includes the carbon atoms at positions 1 and 2 and is selected from

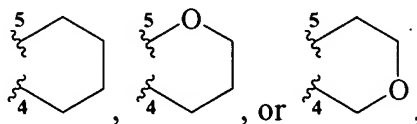


Y is H, oxo, or methyl;

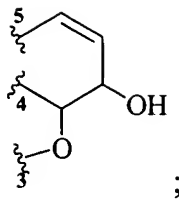
R is selected from H, C₁₋₇ alkyl, C₂₋₇ alkenyl, C₂₋₇ alkynyl, C₂₋₆ heterocyclyl, C₆₋₁₂ aryl, C₇₋₁₄ alkaryl, C₃₋₁₀ alkheterocyclyl, and C₁₋₇ heteroalkyl;

R₁ is selected from H and CH₃;

R₄ is H and R₂ and R₃ are each, independently, H, C₁₋₇ alkyl, or R₂ and R₃ combine to form a fused six-membered ring in which position 4 is connected to position 5 by



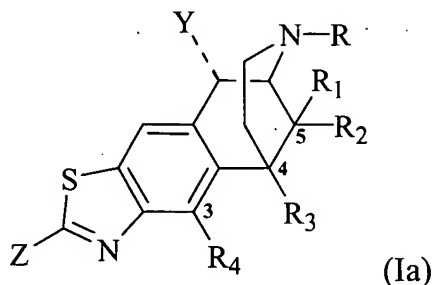
or R₄ combines with R₂ and R₃ to form a fused ring system in which position 3, 4, and 5 are connected by



Z is selected from -NHR_5 and $\text{-N(R}_6)_2$;

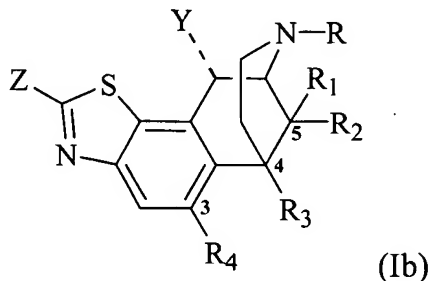
R_5 is selected from H, C_{1-7} alkyl, C_{2-7} alkenyl, C_{2-7} alkynyl, C_{2-6} heterocyclyl, C_{6-12} aryl, C_{7-14} alkaryl, C_{3-10} alkheterocyclyl, C_{1-7} heteroalkyl, acyl, and fatty acid acyl; and each R_6 is, independently, selected from C_{1-7} alkyl, C_{2-7} alkenyl, C_{2-7} alkynyl, C_{2-6} heterocyclyl, C_{6-12} aryl, C_{7-14} alkaryl, C_{3-10} alkheterocyclyl, and C_{1-7} heteroalkyl.

2. The compound of claim 1, wherein said compound is described by formula Ia:



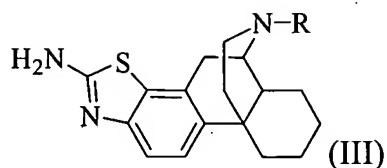
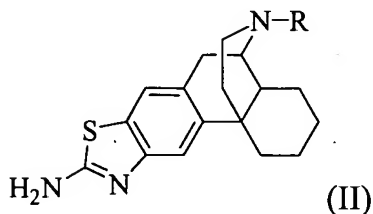
wherein Y, R, R_1 , R_2 , R_3 , R_4 , and Z are defined as in claim 1.

3. The compound of claim 1, wherein said compound is described by formula Ib:



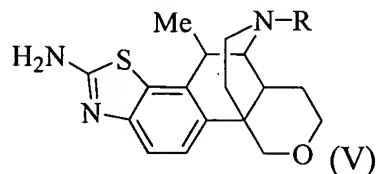
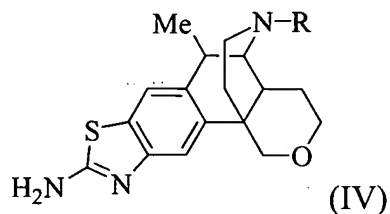
wherein Y, R, R_1 , R_2 , R_3 , R_4 , and Z are defined as in claim 1.

4. The compound of claim 1, wherein said compound is described by formulas II or III:



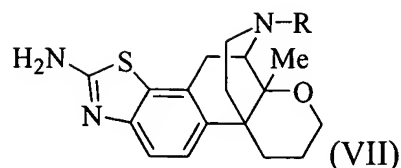
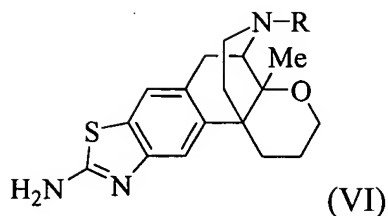
or a pharmaceutically acceptable salt thereof, wherein R is selected from H, C₁₋₇ alkyl, C₂₋₇ alkenyl, C₂₋₇ alkynyl, C₂₋₆ heterocyclyl, C₆₋₁₂ aryl, C₇₋₁₄ alkaryl, C₃₋₁₀ alkheterocyclyl, and C₁₋₇ heteroalkyl.

5. The compound of claim 1, wherein said compound is described by formulas IV or V:



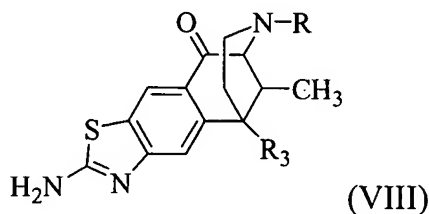
or a pharmaceutically acceptable salt thereof, wherein R is selected from H, C₁₋₇ alkyl, C₂₋₇ alkenyl, C₂₋₇ alkynyl, C₂₋₆ heterocyclyl, C₆₋₁₂ aryl, C₇₋₁₄ alkaryl, C₃₋₁₀ alkheterocyclyl, and C₁₋₇ heteroalkyl.

6. The compound of claim 1, wherein said compound is described by formulas VI or VII:



or a pharmaceutically acceptable salt thereof, wherein R is selected from H, C₁₋₇ alkyl, C₂₋₇ alkenyl, C₂₋₇ alkynyl, C₂₋₆ heterocyclyl, C₆₋₁₂ aryl, C₇₋₁₄ alkaryl, C₃₋₁₀ alkheterocyclyl, and C₁₋₇ heteroalkyl.

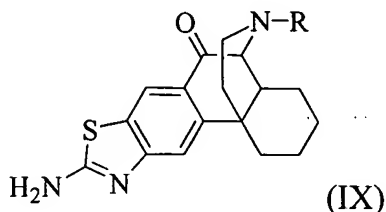
7. The compound of claim 1, wherein said compound is described by formula VIII:



or a pharmaceutically acceptable salt thereof, wherein

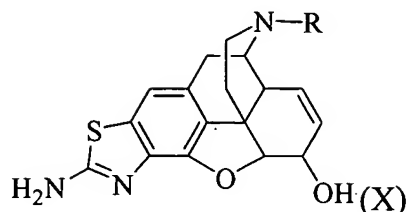
R is selected from H, C₁₋₇ alkyl, C₂₋₇ alkenyl, C₂₋₇ alkynyl, C₂₋₆ heterocyclyl, C₆₋₁₂ aryl, C₇₋₁₄ alkaryl, C₃₋₁₀ alkheterocyclyl, and C₁₋₇ heteroalkyl; and R₃ is CH₃ or CH₂CH₃.

8. The compound of claim 1, wherein said compound is described by formula IX:



or a pharmaceutically acceptable salt thereof, wherein R is selected from H, C₁₋₇ alkyl, C₂₋₇ alkenyl, C₂₋₇ alkynyl, C₂₋₆ heterocyclyl, C₆₋₁₂ aryl, C₇₋₁₄ alkaryl, C₃₋₁₀ alkheterocyclyl, and C₁₋₇ heteroalkyl.

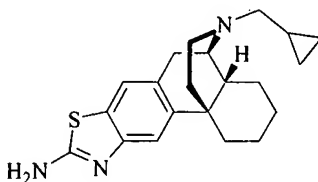
9. The compound of claim 1, wherein said compound is described by formula X:



or a pharmaceutically acceptable salt thereof, wherein R is selected from H, C₁₋₇ alkyl, C₂₋₇ alkenyl, C₂₋₇ alkynyl, C₂₋₆ heterocyclyl, C₆₋₁₂ aryl, C₇₋₁₄ alkaryl, C₃₋₁₀ alkheterocyclyl, and C₁₋₇ heteroalkyl.

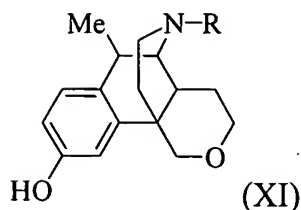
10. The compound of any of claims 4-9, wherein R is selected from CH₃, CH₂(cyclo-C₄H₇), CH₂(cyclo-C₃H₅), CH(CH₃)(cyclo-C₃H₅), CH₂CH₂CH₂F, CH₂CH₂OCH₃, CH₂CH₂OCF₃, CH₂CH(CH₃)₂, CH₂CH=CH₂, *trans*-CH₂CH=CHI, CH₂C≡CH, benzyl, phenethyl, 3,4-dichlorophenethyl, 3-furanylmethyl, 2-furanylmethyl, 3-tetrahydrofuranylmethyl, and 2-tetrahydrofuranylmethyl.

11. The compound of claim 10, wherein said compound has the structure



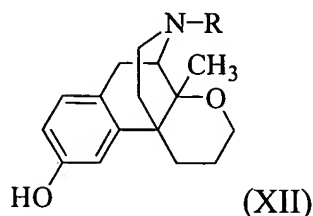
or a pharmaceutically acceptable salt thereof.

12. A compound of formula XI:



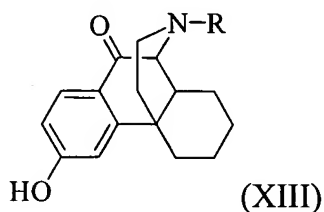
or a pharmaceutically acceptable salt thereof, wherein R is selected from the group consisting of $\text{CH}_2\text{CH}_2\text{CH}_2\text{F}$, $\text{CH}_2\text{CH}_2\text{OCH}_3$, $\text{CH}_2\text{CH}_2\text{OCF}_3$, $\text{CH}_2\text{CH}(\text{CH}_3)_2$, *trans*- $\text{CH}_2\text{CH}=\text{CHI}$, $\text{CH}_2\text{C}\equiv\text{CH}$, benzyl, phenethyl, 3-furanylmethyl, 3-tetrahydrofuranylmethyl, and 3,4-dichlorophenethyl.

13. A compound of formula XII:



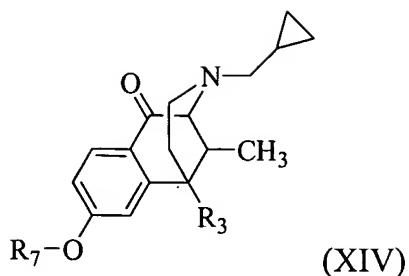
or a pharmaceutically acceptable salt thereof, wherein R is selected from the group consisting of $\text{CH}_2\text{CH}_2\text{CH}_2\text{F}$, $\text{CH}_2\text{CH}_2\text{OCH}_3$, $\text{CH}_2\text{CH}_2\text{OCF}_3$, $\text{CH}_2\text{CH}(\text{CH}_3)_2$, *trans*- $\text{CH}_2\text{CH}=\text{CHI}$, benzyl, phenethyl, 3-furanylmethyl, 3-tetrahydrofuranylmethyl, and 3,4-dichlorophenethyl.

14. A compound of formula XIII:



or a pharmaceutically acceptable salt thereof, wherein R is selected from the group consisting of $\text{CH}_2(\text{cyclo-C}_4\text{H}_7)$, $\text{CH}_2\text{CH}_2\text{CH}_2\text{F}$, $\text{CH}_2\text{CH}_2\text{OCH}_3$, $\text{CH}_2\text{CH}_2\text{OCF}_3$, $\text{CH}_2\text{CH}(\text{CH}_3)_2$, $\text{CH}_2\text{CH}=\text{CH}_2$, *trans*- $\text{CH}_2\text{CH}=\text{CHI}$, $\text{CH}_2\text{C}\equiv\text{CH}$, benzyl, phenethyl, 3-furanylmethyl, 3-tetrahydrofuranylmethyl, and 3,4-dichlorophenethyl.

15. A compound of formula XIV:



wherein R_7 is a fatty acid acyl and R_3 is selected from CH_3 or CH_2CH_3 .

16. A pharmaceutical composition comprising an effective amount of a compound of any of claims 1 to 15 or a suitable salt thereof, together with a pharmaceutically acceptable carrier or diluent.

17. A method of treating pain in a patient in need thereof, said method comprising the step of administering to said patient a pharmaceutical composition of claim 16 in an amount sufficient to treat said pain.

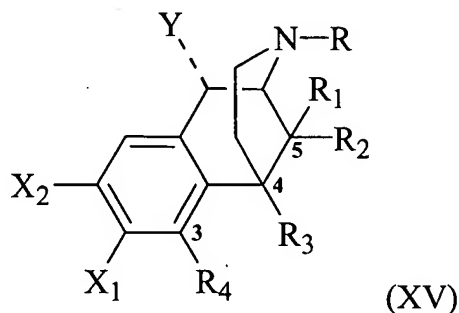
18. A method of treating a dopamine dysregulation disease in a patient in need thereof, said method comprising the step of administering to said patient a pharmaceutical composition of claim 16 in an amount sufficient to treat said disease.

19. The method of claim 18, wherein said disease is selected from the group consisting of schizophrenia, attention deficit hyperactivity disorder (ADHD), attention deficit hyperactivity disorder (ADD), Parkinson's disease, hyperprolactinemia, depression, and addiction.

20. The method of claim 19, wherein said addiction is selected from addiction to a psychostimulant, narcotic analgesic, alcohol, addictive alkaloid, or combinations thereof.

21. The method of claim 20, wherein said narcotic analgesic is cocaine.

22. A method of synthesizing a compound of claim 1, said method comprising the steps of combining thiocyanate and bromine with a compound of formula XV:



wherein

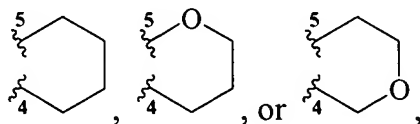
Y is H, oxo, or methyl;

one of X_1 and X_2 is NH_2 and one of X_1 and X_2 is H;

R is selected from H, C_{1-7} alkyl, C_{2-7} alkenyl, C_{2-7} alkynyl, C_{2-6} heterocyclyl, C_{6-12} aryl, C_{7-14} alkaryl, C_{3-10} alkheterocyclyl, and C_{1-7} heteroalkyl;

R_1 is selected from H or CH_3 ;

R_4 is H and R_2 and R_3 are each, independently, H, C_{1-7} alkyl, or R_2 and R_3 combine to form a fused six-membered ring in which position 4 is connected to position 5 by



or R_4 combines with R_2 and R_3 to form a fused ring system connecting positions 3,

4, and 5 by

